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Column 466

# Barrier to salmon crumbles on the Alsek

by Claire Eamer

Not much can stop a spawning salmon determined to head upstream. Turnback Canyon on the Alsek River is one of the few exceptions.

Turnback Canyon is a narrow, twisted, viciously fast and turbulent stretch of white water, created when the toe of Tweedsmuir Glacier pushed the Alsek River against the valley wall, forcing it to cut a new path into solid rock.

Turnback Canyon (lower right) was created when Tweedsmuir Glacier pushed the Alsek River to the side of the valley. Now, with the glacier in retreat, pools of water are appearing in the main valley and the river could change course.

(photo: Al von Finster)

Spawning sockeye salmon migrate up the Alsek from the Pacific Ocean and spread out through its channels and tributaries, but they come to a dead stop at Turnback Canyon.

It's not that they don't want to continue up the river, says Al von Finster, habitat biologist with the Department of Fisheries and Oceans in Whitehorse. He suspects the current is just too strong and the few pools too turbulent.

A 2003 map of radio-tagged sockeye salmon in the Alsek shows a clump of them at the bottom of Turnback Canyon, but none further up the river.

"They're bumping their noses on it," says von Finster. "They're ready. They want to go there."

And they might soon get the chance. 2008-02832/

Glaciers along the Alsek have a long history of partial or complete blockage of the river as they go through their cycles of advance and retreat, and the Tweedsmuir Glacier is one of the liveliest.

"It was a galloping glacier," says von Finster.

As recently as 1973 and 1974, it was advancing and there was serious concern that it might block the river and flood the valley in which Haines Junction sits.

Thirty years later, the Tweedsmuir is in rapid retreat, possibly spurred on by climate change.

The wall of ice that was crowding into the river has retreated well away from it and withdraws further every year. The river is widening and braiding through the gravel deposited by the glacier, pools are expanding into small lakes, and water is flowing from an opening under the ice itself.

Von Finster says there are indications of a channel beneath the ice, possibly the ancient bed of the river. As the glacier retreats, the river might well return to its older, less turbulent bed. Alternatively, it might cut a new and easier channel through the loose gravel deposited at the toe of the glacier as it melts.

Either way, the result from a sockeye salmon's point of view would be a broad highway into the upper Alsek River and the southwestern Yukon lakes that feed it: Kloo, Kathleen, Dezadeash, even Pine Lake and Aishihik Lake.

Would they want to go there? Quite probably, von Finster says.

Sockeye are the only salmon that use lakes for rearing their young, and the lakes of the southwestern Yukon suit them just fine. There is already a population of sockeye that makes its way up the Klukshu River to Klukshu Lake.

The sockeye wouldn't appear instantly in all the lakes of the Alsek system. Von Finster estimates it could take anywhere up to several hundred years for them to completely colonize the system. Some lakes would not be accessible to them without a little human help in the form of fish ladders.

However, the lakes are capable of supporting substantial populations of sockeye, once the fish reach them. To estimate how big those populations might be, Jody Mackenzie-Grieve, von Finster's colleague, applied a model developed from sockeye production data from Alaskan lakes.

The model suggested that Kloo lake, for example, could produce up to 1.6 million smolts (juvenile salmon) and Dezadeash Lake could produce up to 8 million smolts.

Because the model was based on very productive Alaskan systems, these numbers are probably an over-estimate of the productive capacity of southwest Yukon lakes, Mackenzie-Grieve warns. However, she says substantial production appears to be possible.

That's a lot of fish, and potentially a lot of money.

"Sockeye salmon are the moneymakers," says von Finster. They could be the foundation of a substantial commercial fishery in the southwestern Yukon, sometime in the future.

How far in the future? No one knows. However, von Finster says the glacier is retreating rapidly and the path upriver could open fairly soon.

That's when the situation gets complicated -- not for the salmon, but for the humans who will have to cooperate in managing the resource.

Alsek River salmon migrate through two countries, one state, one province, one territory, the traditional territory of the Champagne and Aishihik First Nations, one municipality, three protected areas, and a Canadian Heritage River.

"It's something that people should be starting to think of," says von Finster. "The dialogue should probably start now."

Jody Mackenzie-Grieve and Al von Finster will deliver a presentation about the retreat of Tweedsmuir Glacier and its potential impact on sockeye salmon at the Yukon Biodiversity Forum at Yukon College on April 8. For information about the Forum, contact Scott Gilbert at Yukon College, (867) 668-8776 or sgilbert@yukoncollege.yk.ca. The Forum is free and open to everyone, registration is requested.

Environment Canada
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